# BioMap and Living Waters

# Guiding Land Conservation for Biodiversity in Massachusetts

# Core Habitats of Rehoboth

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is <u>not</u> intended for use in state regulations.

Produced by:

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

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# **Table of Contents**

#### Introduction

What is a Core Habitat?

Core Habitats and Land Conservation

In Support of Core Habitats

Understanding Core Habitat Species, Community,

and Habitat Lists

What's in the List?

What does 'Status' mean?

**Understanding Core Habitat Summaries** 

Next Steps

**Protecting Larger Core Habitats** 

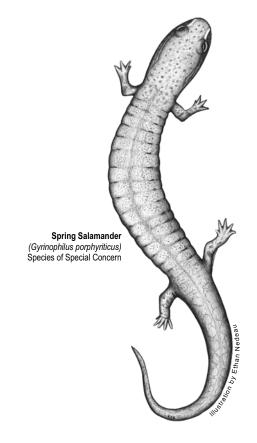
Additional Information

Local Core Habitat Information\*

BioMap: Species and Natural Communities

BioMap: Core Habitat Summaries Living Waters: Species and Habitats Living Waters: Core Habitat Summaries

\* Depending on the location of Core Habitats, your city or town may not have all of these sections.



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Guiding Land Conservation for Biodiversity in Massachusetts

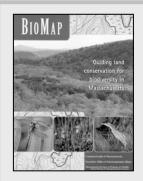
# Introduction

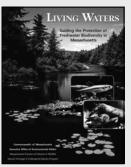
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, BioMap and Living Waters. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

#### What is a Core Habitat?

Both BioMap and Living Waters delineate Core *Habitats* that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the BioMap and Living Waters reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

## **Core Habitats and Land Conservation**

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the *riparian areas*, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

# In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as Supporting Natural *Landscape* provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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# BioMap and Living Waters:

# Guiding Land Conservation for Biodiversity in Massachusetts

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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from <a href="https://www.mass.gov/mgis">www.mass.gov/mgis</a>.

# **Understanding Core Habitat Species, Community, and Habitat Lists**

## What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the <u>entire</u> Core Habitat, not just the portion that falls within your city or town. For a list of <u>all</u> the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at <u>www.nhesp.org</u>.

The list of species and communities within a Core Habitat contains <u>only</u> the species and

**Table 1.** The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap			
	Species and Verified		
	Natural Community Types		
Biodiversity Group	Included in BioMap	Total Statewide	
Vascular Plants	246	1,538	
Birds	21	221 breeding species	
Reptiles	11	25	
Amphibians	6	21	
Mammals	4	85	
Moths and Butterflies	52	An estimated 2,500 to 3,000	
Damselflies and Dragonflies	25	An estimated 165	
Beetles	10	An estimated 2,500 to 4,000	
Natural Communities	92	> 105 community types	
Living Waters			
	Species		
Biodiversity Group	Included in Living Waters	Total Statewide	
Aquatic			
Vascular Plants	23	114	
Fishes	11	57	
Mussels	7	12	
Aquatic Invertebrates	23	An estimated > 2500	

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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# BioMap and Living Waters:

# Guiding Land Conservation for Biodiversity in Massachusetts

species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

# What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- Endangered species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- *Threatened* species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial watch list of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

# **Legal Protection of Biodiversity**

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The *Massachusetts Natural Heritage Atlas* shows Priority Habitats, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and Estimated Habitats, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- Critically Imperiled communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- *Imperiled* communities typically have 6-20 sites or few remaining acres in the state.
- *Vulnerable* communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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# Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at <a href="https://www.nhesp.org">www.nhesp.org</a>.

# **Next Steps**

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

# **Protecting Larger Core Habitats**

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

#### **Additional Information**

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive

Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - \* Natural Heritage Atlas, and more!



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# **BioMap: Species and Natural Communities**

# Rehoboth

## **Core Habitat BM1180**

**Natural Communities** 

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Alluvial Red Maple Swamp Vulnerable

Small-River Floodplain Forest Imperiled

**Plants** 

Common Name Scientific Name Status

Cat-Tail Sedge Carex typhina Threatened

Vertebrates

Common Name Scientific Name Status

Blanding's Turtle Emydoidea blandingii Threatened

Eastern Box Turtle Terrapene carolina Special Concern

Spotted Turtle Clemmys guttata Special Concern

Wood Turtle Clemmys insculpta Special Concern

Core Habitat BM1212

**Natural Communities** 

Common Name Scientific Name Status

Acidic Graminoid Fen Vulnerable

Red Maple Swamp Secure

**Plants** 

Common Name Scientific Name Status

Long's Bitter-Cress Cardamine longii Endangered

River Arrowhead Sagittaria subulata var subulata Endangered

Vertebrates

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Blue-spotted Salamander Ambystoma laterale Special Concern



# **BioMap: Species and Natural Communities**

# Rehoboth

Eastern Spadefoot Scaphiopus holbrookii Threatened

Spotted Turtle Clemmys guttata Special Concern

**Core Habitat BM1223** 

**Natural Communities** 

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Red Maple Swamp Secure

Vertebrates

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Four-toed Salamander Hemidactylium scutatum Special Concern

Spotted Turtle Clemmys guttata Special Concern

**Core Habitat BM1224** 

**Natural Communities** 

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Alluvial Red Maple Swamp Vulnerable

**Plants** 

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Long's Bitter-Cress Cardamine longii Endangered

Invertebrates

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Hessel's Hairstreak Callophrys hesseli Special Concern

Vertebrates

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Eastern Box Turtle Terrapene carolina Special Concern

Marbled Salamander Ambystoma opacum Threatened

Spotted Turtle Clemmys guttata Special Concern

Wood Turtle Clemmys insculpta Special Concern



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# **BioMap: Species and Natural Communities**

# Rehoboth

**Core Habitat BM1240** 

Vertebrates

<u>Common Name</u> <u>Scientific Name</u> <u>Status</u>

Eastern Spadefoot Scaphiopus holbrookii Threatened

# Rehoboth

## **Core Habitat BM1180**

This large, multi-lobed Core Habitat contains riparian and wetland habitats adjacent to the Threemile River and its tributaries, as well as many Potential Vernal Pools. These areas provide significant habitat for four rare turtle species. Also included is a large and high-quality Small-River Floodplain Forest community that supports the rare Cat-Tail Sedge.

# **Natural Communities**

This Core Habitat contains a large and high-quality Small-River Floodplain Forest in Taunton that is free of exotic plant species and well-buffered by surrounding natural forest. Small-River Floodplain Forests are Silver Maple-Green Ash forests occurring on alluvial soils of small rivers and streams. In Norton, a good example of an Alluvial Red Maple Swamp extends along the river, fairly well-buffered from development and with few exotic species. Alluvial Red Maple Swamps are a type of Red Maple Swamp that occurs in low areas along rivers and streams. Regular flooding enriches the soil with nutrients, resulting in an unusual set of associated trees and plants.

## **Plants**

A disjunct population of the Threatened Cat-Tail Sedge, which has a thick inflorescence reminiscent of the Common Cattail, is found here within an emergent marsh in a floodplain. Most populations of this sedge are found in central Massachusetts.

#### Vertebrates

Numerous meandering stream channels with a good interspersion of bordering wetlands and undeveloped uplands, combined with several observations of turtles, suggest that habitats here support significant populations of Wood Turtles and Spotted Turtles. A recent observation of a Blanding's Turtle, in the context of the long, meandering reaches of the Threemile River and its tributaries, along with the abundant bordering wetlands, suggests that this area may also support a significant population of this species. In fact, this site may represent the southernmost population of Blanding's Turtles known in New England. This Core Habitat also encompasses significant habitat for Eastern Box Turtles, and likely for Four-toed and Marbled Salamanders as well. Most of this Core Habitat is currently unprotected from development.

# Rehoboth

## Core Habitat BM1212

This Core Habitat encompasses a variety of wetland and undeveloped upland habitats that are home to Spotted Turtles, Blue-spotted Salamanders, and Eastern Spadefoot toads. The northern section of the Core Habitat also contains an excellent Red Maple Swamp community in Squannakonk Swamp, and the southern section contains important Endangered plant populations along the Palmer River, including the largest population of Long's Bitter-Cress in Massachusetts.

## **Natural Communities**

This Core Habitat contains a large, high-quality Red Maple Swamp that is free of exotic species and disturbances. This swamp is embedded within almost 2000 acres of naturally forested land. Within the Red Maple Swamp is an Acidic Graminoid Fen, an uncommon natural community type. Acidic Graminoid Fens are sedge and Sphagnum-dominated acidic peatlands that experience some groundwater and/or surface water flow but no calcareous seepage. Standing water is often present throughout much of the growing season.

#### **Plants**

The tidal brackish-to-freshwater marsh and shores along the Palmer River support populations of the Endangered River Arrowhead, as well as the state's largest population of the Endangered Long's Bitter-Cress.

## Vertebrates

This large multi-lobed Core Habitat provides significant habitat for Spotted Turtles with the abundance of shallow wetlands and the presence of many vernal pools interspersed with undeveloped uplands. Significant habitat for Blue-spotted Salamanders is also found in the complexes of vernal pools and in the forested wetlands and adjacent uplands along Oak Swamp and Rumney Marsh Brooks and at Squannakonk Swamp. Eastern Spadefoot toads are present in portions of this Core Habitat where seasonal pools occur in sandy soils. Spadefoot toads in this part of the state are disjunct from other populations that occur in coastal habitats and in the Connecticut River Valley.

#### Core Habitat BM1223

The mix of wetlands and uplands in this Core Habitat provides habitat for Spotted Turtles, Four-toed Salamanders, and a variety of birds typical of the region. In Rehoboth, the Core Habitat also includes a large example of a Red Maple Swamp natural community.

## **Natural Communities**

The part of this Core Habitat in Rehoboth contains a large, young Red Maple Swamp in an excellent surrounding landscape. Red Maple Swamps are acidic forested wetlands that are dominated by Red Maple. They are the most common forested wetlands in Massachusetts. This community type is highly variable in its species composition.



# Rehoboth

#### Vertebrates

The extensive wetlands, adjacent uplands, and vernal pools in this Core Habitat provide significant habitat for Spotted Turtles and Four-toed Salamanders. Also present is suitable habitat for species of birds associated with the forested wetlands of southeastern Massachusetts, including the Carolina Wren and Northern Waterthrush.

#### Core Habitat BM1224

This large Core Habitat encompasses the Cole River and several brooks, a number of wetlands, adjacent uplands, and vernal pools that provide significant habitat for at least four species of rare turtles and salamanders. Also within the Core Habitat is an Alluvial Red Maple Swamp, an Atlantic White Cedar Swamp that is habitat for the rare Hessel's Hairstreak butterfly, and a population of the Endangered Long's Bitter-Cress.

#### **Natural Communities**

A large and high-quality Alluvial Red Maple Swamp is found here along a stream in Swansea and Dighton. Alluvial Red Maple Swamps are a type of Red Maple Swamp that occurs in low areas along rivers and streams. Regular flooding enriches the soil with nutrients, resulting in an unusual set of associated trees and plants. Although bisected by a road, the swamp here is surrounded by naturally occurring vegetation.

#### **Plants**

A population of the Endangered Long's Bitter-Cress is found along a tannin-laden stream within this Core Habitat.

## Invertebrates

The northwestern portion of this Core Habitat includes an Atlantic White Cedar swamp that is habitat for Hessel's Hairstreak butterfly. The habitat is unfragmented, of sufficient size, and located in a relatively undeveloped landscape, all of which indicate a high-quality conservation opportunity. Apparently little of this Core Habitat is protected.

#### Vertebrates

A cluster of observations from the southern portion of this Core Habitat, combined with its large size, relative lack of fragmentation, riparian connectivity, and habitat diversity, indicate that this area provides significant habitat for Spotted, Wood, and Eastern Box Turtles, as well as Marbled Salamanders. Four-toed Salamanders may be present as well. The attributes of the Core Habitat suggest that these populations have high probabilities of long-term viability if adequately protected.



# Rehoboth

## **Core Habitat BM1240**

# Vertebrates

This Core Habitat encompasses sandy upland habitats and Potential Vernal Pools along Rocky Run on the Manwhague Plain. It contains several undeveloped areas of dry sandy soils that support at least one breeding population of Eastern Spadefoot toads and likely more. Spotted Turtles may be present in scattered wetlands and vernal pools. Rocky Run provides riparian connectivity with more extensive wetlands associated with Oak Swamp Brook to the west.

# **Living Waters: Species and Habitats**

# Rehoboth

Core Habitat LW084		
Fishes		
Common Name	Scientific Name	<u>Status</u>
Spotfin Killifish	Fundulus luciae	
Core Habitat LW181		
Plants		
Common Name	Scientific Name	<u>Status</u>
Featherfoil	Hottonia inflata	Watch Listed
Core Habitat LW329		
Exemplary Habitats		
Common Name	Scientific Name	<u>Status</u>
Fish Habitat		
Core Habitat LW397		
Exemplary Habitats		
Common Name	Scientific Name	<u>Status</u>
Invertebrate Habitat		
Core Habitat LW399		
Exemplary Habitats		
Common Name	Scientific Name	<u>Status</u>
Invertebrate Habitat		
Core Habitat LW400		
Exemplary Habitats		
Common Name	Scientific Name	<u>Status</u>
Invertebrate Habitat		



# **Living Waters: Core Habitat Summaries**

# Rehoboth

## **Core Habitat LW084**

This section of the Palmer River encompasses the only known occurrence of the Spotfin Killifish in the state, and lies at the northernmost part of this species' range. The Spotfin Killifish is found in intertidal marshes that do not flood on every tide. This species may be overlooked as it is often found in very shallow water around marsh vegetation.

#### Core Habitat LW181

A population of Featherfoil, an uncommon and unusual-looking plant with feathery leaves, inhabits shallow areas of this small pond in Rehoboth. Since this plant is rare in most surrounding states, we must safeguard the Massachusetts populations of this species to avoid further declines in New England.

## **Core Habitat LW329**

This stretch of the Palmer River contains spawning (breeding) habitats for American Shad and Rainbow Smelt, two anadromous fishes that migrate from coastal waters into fresh waters to spawn. Alewife passes through this area to get to their upstream spawning grounds. These and other migrating fish species are important components of Massachusetts' aquatic biodiversity.

## **Core Habitat LW397**

The West Branch of the Palmer River supports a community of the more ecologically sensitive aquatic insects: mayflies, stoneflies, and caddisflies. The presence of this invertebrate community indicates the stream habitats here are relatively free of the impacts of development. Vegetated stream banks along the Core Habitat help maintain the habitat quality, shading the water to keep it cool and controlling the runoff of sediments, excess nutrients, and water.

## **Core Habitat LW399**

The East Branch of the Palmer River supports a healthy community of the more ecologically sensitive aquatic insects: mayflies, stoneflies, and caddisflies. The presence of this invertebrate community indicates the stream habitats here are relatively free of the impacts of development. Naturally vegetated stream banks and wetlands along the Core Habitat and upstream help maintain the habitat quality, shading the water to keep it cool and controlling the runoff of sediments, excess nutrients, and water.

## **Core Habitat LW400**

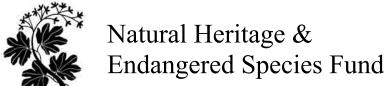
Rocky Run supports a community of the more ecologically sensitive aquatic insects: mayflies, stoneflies, and caddisflies. The presence of this invertebrate community indicates the stream habitats here are relatively free of the impacts of nearby development. Naturally vegetated stream banks and wetlands along the Core Habitat and upstream help maintain the habitat quality, shading the water to keep it cool and controlling the runoff of sediments, excess nutrients, and water.



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# Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the



To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: <a href="www.nhesp.org">www.nhesp.org</a>.